

Peer Review File

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Review comments:

I am pleased to read articles concerned with mental health issues arising from false-positive lung cancer screening. The authors give a detailed account of the search process and results and list the state of the evidence within this TOPIC. Methodologically reliable. There are implications for clinical practice and policy. I have some suggestions.

Comment 1. I think it may be questionable to mention "Yet, screening programmes for lung cancer are rather uncommon" in the abstract. This would weaken the importance of this article. On the other hand, screening for lung cancer in some countries is not uncommon.

Reply 1: We thank the reviewer for this comment. We deleted the sentence "Yet, screening programmes for lung cancer are rather uncommon" in the abstract. Instead, we inserted the following: "This is less the case for lung cancer screening. However, some countries already introduced lung cancer screening and the interest in it is growing"

Comment 2. Please update some epidemiological data; for example, data from reference 1 is from 2012.

Reply 2: Indeed, the epidemiological data needed to be updated. We changed the sentence: "Lung cancer represents 27% of worldwide cancer deaths with a survival rate that ranges from 52% in localised lung cancer to 4% for metastasised lung cancer (1)." as follows:

Lung cancer is the leading cause of cancer death, with 18% of worldwide cancer deaths (1) and with a 5-year relative survival rate that ranges from 63% in localised lung cancer to 7% for metastasised lung cancer (2).

The data on the worldwide cancer deaths (new reference 1) are retrieved from a recent article by Sung H et al.; Global Cancer Statistics 2020: GLOBOCAN estimates of Incidence and Mortality Worldwide for 36 cancers in 185 countries. *CA CANCER J CLIN* 2021;0:1–41

The data on the 5-year relative survival rate (new reference 2) are based on the SEER database (SEER = Surveillance, Epidemiology, and End Results) maintained by the National Cancer Institute (NCI). The data were retrieved from the website of the American Cancer Society:

<https://www.cancer.org/cancer/lung-cancer/detection-diagnosis-staging/survival-rates.html>

Comment 3. "Lung cancer corresponds to 27% of worldwide cancer related deaths (1). This high death rate is mainly due to almost more than half of diagnosing taking place in the last stage of the disease decreasing 5-year survival to 4% (1,2). " in the discussion is just as similar as the information in the introduction. Better delete this and briefly showcase the severity and high prevalence.

Reply 3: We deleted the sentence in the discussion section and replaced it by a sentence underlining the high prevalence and severity:

“Lung cancer is the most commonly occurring cancer in men and the third most commonly occurring cancer in women. Globally, there were 2.1 million new cases and 1.8 million deaths in 2018 (23).”

These data were retrieved from the website of the World Cancer Research Fund – American Institute for Cancer Research (<https://www.wcrf.org/dietandcancer/lung-cancer-statistics/>)

Comment 4. It is recommended that the discussion include an evaluation of the quality of the included studies. For example, what is the sample size of the available studies? What is representativeness? Was the research method used SURVEY? Is it retrospective or prospective? What future research needs to be conducted in this area, and where does it need to be strengthened?

Reply 4: Thank you for this comment. We indeed think this is a part which was lacking in our review. Therefore, we included an evaluation of the quality of the included studies and suggestions for future research at the end of the discussion section of the manuscript:

“This review is based on studies which used a variety of research methods, study designs and sample sizes. Besides of three systematic reviews, there was a narrative article, an RCT, an intervention study, quantitative studies with questionnaires and a qualitative study with seven focus groups. Regarding the questionnaire studies, most

used self-administered questionnaires but one study conducted semi-structured interviews. Some studies mentioned they used validated questionnaires, other did not. A few studies carried out the questionnaire in the same group of respondents on several moments in time, others did a mere cross-sectional study. Also regarding the sample size, marked differences could be seen, from semi-structured interviews in 28 current and former smokers, to a few thousands respondents in a study with self-administered questionnaires. Several studies included validated questionnaires, as well regarding the psychological consequences as regarding the setting of lung cancer screening. Others did not mention this. Although all studies included in our review can be considered as being of good quality, some general remarks should be made in view of future research. At this moment, the number of studies on the topic of LCS and its psychological consequences on the participants, is scarce. Moreover, sometimes, more appropriate measurement tools could be used, for instance for taking into account the specific situation of lung cancer screening or by using validated scales to measure psychological consequences. Most of the time, studies were conducted within a trial setting and only a few studies did follow-up the respondents prospectively. Studies should also be more based on representative samples instead of on convenience samples.”

Comment 5. Additional tables are needed to summarize the key findings/results.

Answer 5: Thank you for this comment. We agree that a summarizing table could be an added value. We included a table summarizing several ways to deal with the psychological burden of participating in lung cancer screening, at the end of the Results section:

Table 1: Several ways to deal with the psychological burden of participating in lung cancer screening

Psychological preparedness (preparing one’s self for the worse)
Possibility of a follow up test or consultation with a specialist
Balanced information, not only emphasizing the potential negative psychological effects of screening, possibly with a video
Dealing with stigma
Social support
A broad cancer prevention approach
Psychological intervention through a medical survey